Editor's note

Based on computer science and relevant scientific technologies, virtual reality (VR) produces a digital environment where visual perception, sense of hearing, and sense of touch are highly similar to those of actual environment within a certain range. With the help of necessary equipment to interact and interfere with objects in digital environment, users may have the feelings and experiences corresponding to those in the actual environment. VR brought novel concepts and mechanisms of human-machine environment and human-machine interaction. It can support simulation and training in digital spaces, thereby resulting in a significant reduction of costs or risks, such as training in dangerous situation and military maneuver, in real operations. In some sense, VR plays the same role in applied fields as mathematics in physics.

Since its emergence, VR has posed many challenges to such areas as high-performance computing, 3D display, human-machine interface and human-machine interaction. And it is only since the early 1990s, with the development of computer hardware and expanding markets, has VR developed rapidly and gradually possessed its own discipline and research field.

During the last ten years, Chinese research workers have made many innovative achievements in VR modeling, realism rendering, human-machine interaction, distributed interactive simulation, mixed virtual reality, etc. In 2006, VR technology was included in Chinese Medium and Long Term Program for Scientific and Technological Development as one of the nation's technological development objectives.

In order to reflect the newest achievements in VR fundamental research and to have a look into the perspective of VR development, Science in China Series F-Information Sciences organizes this special issue of Virtual Reality. This issue consists of a survey and 11 papers, involving innovative researches on deformable object modeling and rendering, texture process, point cloud geometry, force sense generation, distributed simulation, etc.

It is our hope that more researchers will engage in VR and contribute to this realm. Taking this advantages, we thank all the contributors, referees and editors for their efforts to this special issue.

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